

**Bharat Heavy Electricals Limited**  
**High Pressure Boiler Plant**  
**Tiruchirappalli – 620 014. India**  
**Civil Engineering Department (Factory)**

**TENDER DOCUMENT (PRICE BID)**

**Name of work** : Fabrication and erection of all structural steel works including crane rail (at Bhandara Project site), supply of anchoring system **as per drawing**, providing Aluminium and Zinc alloy colour coated high tensile steel sheet for roofing and side cladding, turbo ventilators, etc. in shop floors at Power Equipment Fabrication Plant near Sakoli, Bhandara District, Maharashtra State.

**Tender Notice No.** : **CF: TN: 006 / 14-15**

**Tender Schedule No.** : **CF: TS: 019 / 14-15**

**Period of Contract** : **12 ( Twelve) Months**

**Issued to** :

## SCHEDULE 'A'

### LIST OF WORKS AND PRICES

#### NAME OF WORK:

Fabrication and erection of all structural steel works including crane rail (at Bhandara Project site), supply of anchoring system **as per drawing**, providing Aluminium and Zinc alloy colour coated high tensile steel sheet for roofing and side cladding, turbo ventilators, etc. in shop floors at Power Equipment Fabrication Plant near Sakoli, Bhandara District, Maharashtra State.

DETAILS & QUANTITIES of each item of work shown in the BILL OF QUANTITIES are only approximate. They are given as a guide for the purpose of tendering only and are liable to variation and alteration of the Competent Authority. The work under each item as executed shall be measured and priced at the corresponding rate quoted by the contractor in the BILL OF QUANTITIES

Sl.No.	Description of work / supplied	Total amount of work / supplies (in figures and words)		Period of contract
		Rs.	Ps.	
1.	Fabrication and erection of all structural steel works including crane rail (at Bhandara Project site), supply of anchoring system as per drawing, providing Aluminium and Zinc alloy colour coated high tensile steel sheet for roofing and side cladding, turbo ventilators, etc. in shop floors at Power Equipment Fabrication Plant near Sakoli, Bhandara District, Maharashtra State.			<b>12 MONTHS</b>

#### BILL OF QUANTITIES

Sl. No.	Appx. Qty.	Description of work	Rate (Both in Unit fig & Words)		Amount	
			Rs.	Ps.	Rs.	Ps.

AS PER SEPARATE SHEETS ATTACHED CONTAINING **8** PAGES

FROM SERIAL No. **3 to 10 of Price Bid**

CONTRACTOR

2

ACCEPTING OFFICER

**BHARAT HEAVY ELECTRICALS LIMITED  
TIRUCHRAPPALLI –M14**

**BILL OF QUANTITIES**

**NAME OF WORK:** Fabrication and erection of all structural steel works including crane rail (at Bhandara Project site), supply of anchoring system as per drawing, providing Aluminium and Zinc alloy colour coated high tensile steel sheet for roofing and side cladding, turbo ventilators, etc. in shop floors at Power Equipment Fabrication Plant near Sakoli, Bhandara District, Maharashtra State.

Sl. No.	Qty.	Description of Work	Rate	Unit	Amount
		<b>PART - A</b>			
1	7,050	Structural steel fabrication works using the raw structural steel sections at site fabrication shop, fabrication of steel work including all materials going into the process of fabrication and forming an integral part of the steel work together with all shop welding including using low hydrogen electrode wherever necessary, all as per drawings and as per Q.C.P of BHEL and standard specifications. Sequence of welding shall be worked out by the contractor and submitted to BHEL for approval. Rate includes delivery of fabricated steel work including loading, leading and unloading at erection site and ready for erection, including preparation and supply of Drawing Office despatch List for BHEL <b>approval</b> in computer compact disk with two copies of print out, all charges for packing (wherever called for) handling, conveying and all other incidental charges both for raw material and for fabricated steel work. Rate excludes raw structural steel sections which will be supplied by BHEL at site of work at free of cost. Rate shall include cost of providing one coat of red oxide primer to relevant IS specification over structural steel works including preparing the surfaces by thoroughly cleaning oil, grease, dirt and other foreign matters and scoured with wire brushes, fine steel wool scrapers and sand paper, all as per standard specifications. Rate also shall include labour for fabrication, consumables, hire charges for welding tools and plants, fuels, etc. complete.		MT	

**CONTRACTOR**

3

**ACCEPTING OFFICER**

Sl. No.	Qty.	Description of Work	Rate	Unit	Amount
2	750	Structural steel fabrication works using the raw structural steel sections at site fabrication shop, fabricating the components using submerged arc welding with single (or) multiple electrodes and with approved quality of flux following the procedure stipulated in AWS D 1.1(latest). The components shall be pre-assembled with required facilities for turning, inverting, tilting to facilitate fabrication and inspection. Edge preparation for welds shall be as per AWS D 1.1 (latest) or as per Q.C.P of BHEL. Sequence of welding shall be worked out by the contractor and submitted to BHEL for approval. The components to be fabricated shall be pre-heated / post-heated to remove residual stresses due to welding and to remove distortion using temporary fixtures as per Q.C.P of BHEL. Erection mark and stacking the fabricated components shall be executed in accordance with standards. Payment will be made only for the members / parts which were welded together using auto welding under this item. Any other attachment like bracings, battens, stiffeners, gussets, cleats, ribs etc which will be welded during assembly will be paid under item (1) of this Bill of Quantities. The rate shall include cost of providing one coat of red oxide primer to relevant IS specification and delivery of fabricated steel work at erection site ready for erection including preparation & supply of DODL for BHEL's approval in computer compact disk with two copies of printout. The quoted rate shall also include cost for handling, leading, conveying, stacking, consumables, hire charges for tools, plants, fuels, labours and other incidental etc complete. Rate excludes raw structural steel sections which will be supplied by BHEL at site of work at free of cost.		MT	
3	80,000	Providing holding down anchorage system with bolts, channels of required sizes with nuts, locknuts, washers etc. and labour for welding the anchorage system as per the drawing attached and the finished anchorage system product shall be handed over to BHEL stores at Bhandara site and all as per the instructions of Engineer-in-charge. Rate includes cost of steel materials, bolts, nuts, washers, channels, fabrication and machining charges including transportation charges, etc. complete.		Kg	

CONTRACTOR

4

ACCEPTING OFFICER

Sl. No.	Qty.	Description of Work	Rate	Unit	Amount
4	7800.00	Painting (excluding priming coat) on structural steel works in roof structures, columns etc., with synthetic enamel paint of approved brand and shade, brushing to give an even shade including cleaning the surfaces of all dirt, dust and other foreign matters, scaffolding charges etc., .complete. All as per standard specifications. Two coats (DFT 20 micron./ each coat)		MT	
5	20000.00	Carrying out LPI test wherever required as per QCP, in fabrication and erection work as per standard specification and as per the instruction of Engineer-in-charge. The rate to include supply of chemicals, labour, hire charges for tools & plants, scaffolding, other accessories and all incidentals etc., complete.		R.M.	
6	25000.00	Carrying out MPI test wherever required as per QCP, in fabrication and erection work as per standard specification and as per the instruction of Engineer-in-charge. The rate to include supply of chemicals, labour, hire charges for tools & plants, scaffolding, other accessories and all incidentals etc., complete.		R.M.	
7	5000.00	Carrying out radiographic test using Iridium source for butt welds up to a thickness of 40mm wherever required / as per QCP, as per standard specification and direction of Engineer-in-charge. The rate to include supply of required labour, films, tools, plants etc., complete.		SQ.CM.	
8	600.00	Conducting ultrasonic test on welds as per standard practice and instruction of Engineer-in-charge. The rate to include cost of labour, hire charges for tools & plants, accessories, incidentals etc., complete.		R.M.	

CONTRACTOR

5

ACCEPTING OFFICER

Sl. No.	Qty.	Description of Work	Rate	Unit	Amount
9	1400.00	Conducting Ultrasonic testing at BHEL inside fabrication yard for steel plates using straight beam probe 24mm OD of 10mm 100% coverage from one major surface of plate in scanning direction –1 as per standard specification SA 435 / SA 435-M. The rate shall include all labour charges for marking, testing, punching of defective spots, preparation and submission of UT reports, punching of identification numbers and cost of consumables like couplants, cotton waste, etc.,. Qualified NDE personal certified level II as per ASNT standard of latest edition shall conduct testing. Also includes all incidental charges, hire and running charges for equipments tools & plants, transportation, leading, loading, conveyance, etc., complete.		SQM	
		Total cost for Fabrication work			
		<b>Applicable Service Tax @ 4.944% (composite)</b>			
		<b>TOTAL FOR PART – A</b>			

CONTRACTOR

ACCEPTING OFFICER

Sl. No.	Qty.	Description of Work	Rate	Unit	Amount
		<b>PART – B</b>			
1	7800.00	Carrying the fabricated components from stacks at erection site to erection positions and erection of fabricated steel work including all handling, conveying, assembling, hoisting, erecting in position and site welding and or bolting, alignment of structures, all as per drawings, QCP of BHEL and standard specifications. Rate includes bolts, nuts, washers, hire charges for welding, tools and plants, labour, electric power, water, etc. complete but excluding cost of fabricated components. Weight of fasteners will not be accounted for payment.		MT	
2	48450.00	Supplying at site of work , hoisting and fixing in position of 0.47 to 0.50mm thick colour coated Aluminium zinc alloy coated high tensile steel rib profile sheets with accessories such as ridge pieces, barge boards, North light curves, end curves, etc.,as per technical specifications given in note below <b>for roofing at all heights up to (+) 18.00 metres</b> with necessary xylon coated self-tapping / self-drilling screws with EPDM washers at ribs, etc., complete .All as per drawings, manufacturers specifications and instructions of Engineer-in-charge .Rate includes cost of all materials like colour coated Aluminium zinc alloy coated high tensile steel rib profile sheets with accessories such as ridge pieces, barge boards, curves, etc., wherever required self-tapping / self-drilling screws with EPDM washers at ribs etc., and labour charges for fixing, hire charges for tools and plants like drilling machines, providing lifeline and other provisions for safety, and all other incidental charges etc., complete. The payment will be made for the actual laid area only.		Sqm	

CONTRACTOR

7

ACCEPTING OFFICER

Sl. No.	Qty.	Description of Work	Rate	Unit	Amount
3	11500.00	Supplying at site of work , hoisting and fixing in position of 0.47 to 0.50mm thick colour coated Aluminium zinc alloy coated high tensile steel rib profile sheets with accessories such as ridge pieces, barge boards, curves, etc., as per technical specifications given in note below <b>for side sheeting at all heights up to (+) 18.00 metres</b> with necessary xylon coated self-tapping / self-drilling screws with EPDM washers at valleys etc., complete .All as per drawings, manufacturers specifications and instructions of Engineer-in-charge .Rate includes cost of all materials like colour coated Aluminium zinc alloy coated high tensile steel rib profile sheets with accessories such as ridge pieces, barge boards, curves, self-tapping / self-drilling screws with EPDM washers at valleys etc., and labour charges for fixing, hire charges for tools and plants like drilling machines, providing lifeline and other provisions for safety, and all other incidental charges etc., complete. The payment will be made for the actual laid area only.		Sqm	
4	2475.00	<b>Supplying</b> at site of work, hoisting and fixing in position of 2mm thick embossed clear poly carbonate roof light sheets in specified locations and at heights up to (+) 18.00 metres with necessary xylon coated self-tapping / self-drilling screws with EPDM washers at every ribs etc., complete to match the profile of Aluminium Zinc alloy <b>coated</b> high tensile steel roof sheets, as per instructions of Engineer-in-charge. The rate includes cost of poly carbonate sheets, self-tapping / self-drilling screws with EPDM washer at every ribs, and labour charges, all scaffolding charges, tools and plants and all other incidental charges etc., complete .		Sqm	
5	17350.00	Supplying and fixing Galvanised Cup type rail clamp with fittings like stud, bolt of 5.8 grade and spring washer for crane rail / BG track / gantry track etc. Rate includes conveyance, welding including consumables, labour charges etc. complete as per instructions of Engineer-in-charge.		Each	

CONTRACTOR

ACCEPTING OFFICER

Sl. No.	Qty.	Description of Work	Rate	Unit	Amount
6	160.00	Supplying roof extractors ( Turbo Air Ventilators ) of dia 600mm or thereabouts fixing in position on Aluminium zinc alloy coated high tensile steel sheet roofs at heights up to (+) 18.00 metres with necessary screws,, bolts etc., and finishing to match with existing roof. Rate to include cost of all labour charges for fixing the roof ventilators with necessary cutting of sheets to the required size , drilling to suit the screws/ bolts,and finishing to match the existing profile including cost of roof extractors / ventilators. All as per manufacturers specifications and as directed by the Engineer in charge.		Each	
		Total cost for Erection work			
		<b>Applicable Service Tax @ 12.36% (for service on value of erection cost only)</b>			
			<b>TOTAL FOR PART - B</b>		
			<b>TOTAL FOR PART - A</b>		
			<b>GRAND TOTAL</b>		
<b>[ Rupees .....only)</b>					
NOTE:	1	The rate offered is for finished items of works and shall provide for the complete cost towards fuel, electrical energy, air-compressor, tools, tackles, plant & machinery, hire & running charges for welding sets, cranes and other erection equipments, temporary works, labour, all materials other than BHEL free issue materials (Structural steel and rails), levies, taxes including entry / exit taxes, transport/conveyance, lay-out, repairs, rectifications, maintenance till handing over, supervision, labour colonies, establishment, services, revenue expenses, overheads, profits & all other incidentals including insurance coverage for the total cost of the Fabricated structures, etc., complete.			

CONTRACTOR

9

ACCEPTING OFFICER

		<p>The rate quoted shall not include service tax and BOCW Cess. The service tax as applicable for this contract work and the same can be claimed from BHEL along with their monthly bills for further payment to be made to the authorities concerned. At present the rate of service tax is 4.944%. (Service tax + Edu. Cess+ Sec. Higher Edu. Cess) composite rate for value of work done including BHEL free issue materials also for PART-A and 12.36% for erection work (PART-B. However the tenderer has to submit the service tax structure of applicability to their firm nature to arrive at the total cost to BHEL based on which the final award of work will be done. The contractor has to submit the payment challan as a documentary proof of having paid the service tax for the previous bill for which he has received the service tax payment along with the subsequent bill for which payment has to be processed.</p> <p>As per the recent amendment in Cenvat credit Rules 2004, Cenvat credit and Service Tax credit should be availed within 6 months from the date of invoice. Hence the service tax should be claimed by the contractor within four months from the date of invoice. Otherwise any claim pertaining to Service tax will not be entertained by BHEL.</p> <p>The successful tenderer should remit 1% cess as per Building and Other Construction Workers Act 1996 as applicable to the authorities concerned from time to time. The same can be reimbursed from BHEL on production of valid documentary proof for having paid the 1% cess of the value of work done to the authorities concerned. As soon as the BHEL – PEFP Factory Registration obtained, the BOCW Act will not be applicable.</p>	
	2	<p>The period of contract is TWELVE months. However the contractor is required to plan the work and complete sequentially to handover the bays progressively as demanded by BHEL.</p>	

**SCHEDULE 'B'**

1. The following materials will be issued FREE of cost to contractor at **Power Equipment Fabrication Plant near Sakoli, Bhandara district in Maharashtra State.**

SI.No	Name of Material
01	<b>Structural Steel and rails</b>

**SCHEDULE 'C'**

**ISSUE OF TOOLS AND PLANTS TO CONTRACTORS**

SI.No.	Qty.	Particulars	Details of BHEL Crew Supplied	Hire Charges Per unit Per Day	Place of Issue	Remarks
.....Nil.....						

**SCHEDULE 'D'**

NOTE: All Drawings are to be signed by the Contractor as well as the officer entering into contract.

SL.No.	DRAWING NUMBER	DESCRIPTION
1	<b>1-TP-CEG-01050</b>	Layout of Plant.
2	<b>0-TP-CEG-01602</b>	General and structural arrangement of production shop sheet 1 of 2
3	<b>BHE:CP:04:39:2001</b>	Details of cup type rail clamp.
4	<b>3-TP-CEG-01584</b>	Details of foundation bolt & anchorage system
5	<b>0-TP-CEG-01603</b>	General arrangement of structural steel for shop floor – sheet 2 of 2

**SCHEDULE 'E'**

**LEAD STATEMENT**

SI.No	Name of Material	Name of Source	Lead Particulars
1	Cement	NOT APPLICABLE	
2	M.S Rounds,CTD Bars & Structural Steel, rails and all railway materials		
3	Al-Zn alloy coated HT Steel / Polycarbonate Sheets		
4	Cast iron pipes & Specials including pig lead for jointing		

C.A.....Date .....  
(To be used in conjunction with BHE Ltd., General Conditions of Contract)

### AUTHORITY TO TENDER

Tender Notice No. **CF: TN: 006 / 14-15**

Office of the  
DGM / CIVIL / PLANNING (F&T)  
BHARAT HEAVY ELECTRICALS LIMITED  
TIRUCHY – 14.

Tender Schedule No. **CF: TS: 019 / 14-15**

**Item rate tender for the work required,” Fabrication and erection of all structural steel works including crane rail (at Bhandara Project site), supply of anchoring system as per drawing, providing Aluminium and Zinc alloy colour coated high tensile steel sheet for roofing and side cladding, turbo ventilators, etc. in shop floors at Power Equipment Fabrication Plant near Sakoli, Bhandara District, Maharashtra State.”**

Messrs / Mr. ....  
.....of.....

are / is hereby authorized to tender for the above work. The Tender is to be delivered at the Office of the DGM. / CIVIL / PLANNING (F&T) Bharat Heavy Electricals Limited Unit, Thiruverumbur, Tiruchirappalli – 620 014, **up to 10.00 hrs. on 17.09.2014** addressed to the DY GEN MANAGER / CIVIL / PLANNING (F&T), BHEL. Tiruverumbur, Tiruchirappalli – 620 014 superscribing the name of work as mentioned above.

Any correspondence concerning this tender should be addressed as indicated above quoting the Tender Notice, Schedule No. and other relevant particulars.

BHARAT HEAVY ELECTRICALS LIMITED DO NOT BIND THEMSELVES TO ACCEPT THE LOWEST OR ANY TENDER.

Issuing Officer with

Designation

Contract Agreement No.....

**TENDER**

To

The DY GEN MANAGER / CIVIL / PLANNING (F&T)  
Bharat Heavy Electricals Limited  
Unit : Tiruverumbur  
TIRUCHIRAPPALLI – 620 014.

I / We hereby offer to carry out the **“Fabrication and erection of all structural steel works including crane rail (at Bhandara Project site), supply of anchoring system as per drawing, providing Aluminium and Zinc alloy colour coated high tensile steel sheet for roofing and side cladding, turbo ventilators, etc. in shop floors at Power Equipment Fabrication Plant near Sakoli, Bhandara District, Maharashtra State.”**

I / We hereby carefully perused the following documents connected with the above noted work and agree to abide by the same.

- 1. Specifications (General & Particular )
- 2. Drawings
- 3. Schedule ‘A’, ‘B’, ‘C’, ‘D’ & ‘E’
- 4. Preamble, BOQ with detailed specifications, terms and conditions, etc.
- 5. BHE Ltd., General & Special Conditions of Contract, Tender Notice and Instructions to Tenders attached hereto.

I / We forward herewith the sum of Rs.....as Earnest Money, which shall be refunded should this tender be rejected. I / We further agree to deposit such sum which along with the sum of Rs.....mentioned above shall make up 50% of the fully Security Deposit for this work as provided for under conditions of the BHARAT HEAVY ELECTRICALS LIMITED General Conditions of Contract.

I / We further agree to execute all the work referred to in the said documents upon the terms & conditions contained or referred therein and as detailed in Schedule ‘A’ and Bill of Quantities annexure thereto and to carry out such deviations as may be ordered, vide conditions 6 of the BHEL Ltd., General Conditions of Contract up to a maximum of 20% of the tendered amount of Rs.....

I / We further agree to refer all disputes, as required by condition 62 of the General conditions of Contract to the sole arbitration of an Officer, to be appointed by the General Manager, B.H.E Ltd., in his sole discretion whose decision shall be final and binding.

**WITNESS**

Signature of the Contractor

Date :

1. ....

2. ....

**GENERAL SUMMARY**

- |    |   |     |
|----|---|-----|
| 1. | (a) Net Cost of works or building etc., from Schedule 'A' | Rs. |
| 2. | Provisional sum   | Rs. |

.....  
Total Rs.

Rupees.....  
.....  
.....

Shri..... in the capacity  
of ..... has been duly  
authorized by me / us to sign the tender for and on behalf of  
.....

( in block letters )

Date :

SIGNATURE OF CONTRACTOR

Witness :

Postal Address :

1.....  
Address

Telephone No.

2.....  
Address

..... alterations have been made in the  
Tender Document and as evidence that these alterations were made before the execution of contract  
agreement, they have been initialed by the Contractor and the .....

.....  
.....  
.....

.....the said officer is hereby authorized to  
sign and initial on my behalf the documents forming part of this contract (Number of alternation in  
figures and words to be given here)

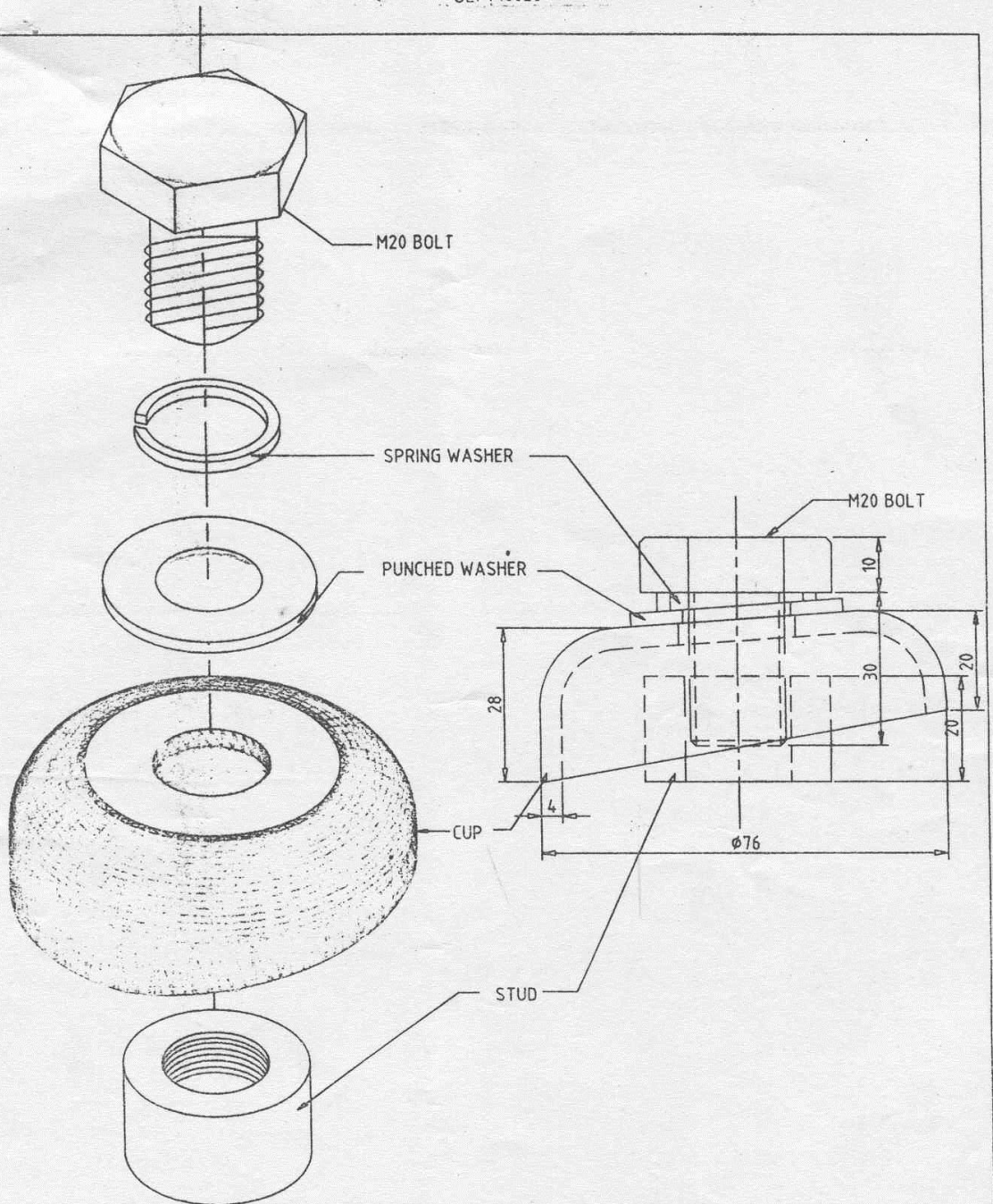
The above tender is accepted by me on behalf of the Bharat Heavy Electricals Limited, Unit:  
Thriuverumbur, Tiruchirappalli – 620 014. for a sum of Rs.....



.....  
.....

.....at the rates as indicated in  
Schedule 'A'.( Bill of Quantities)

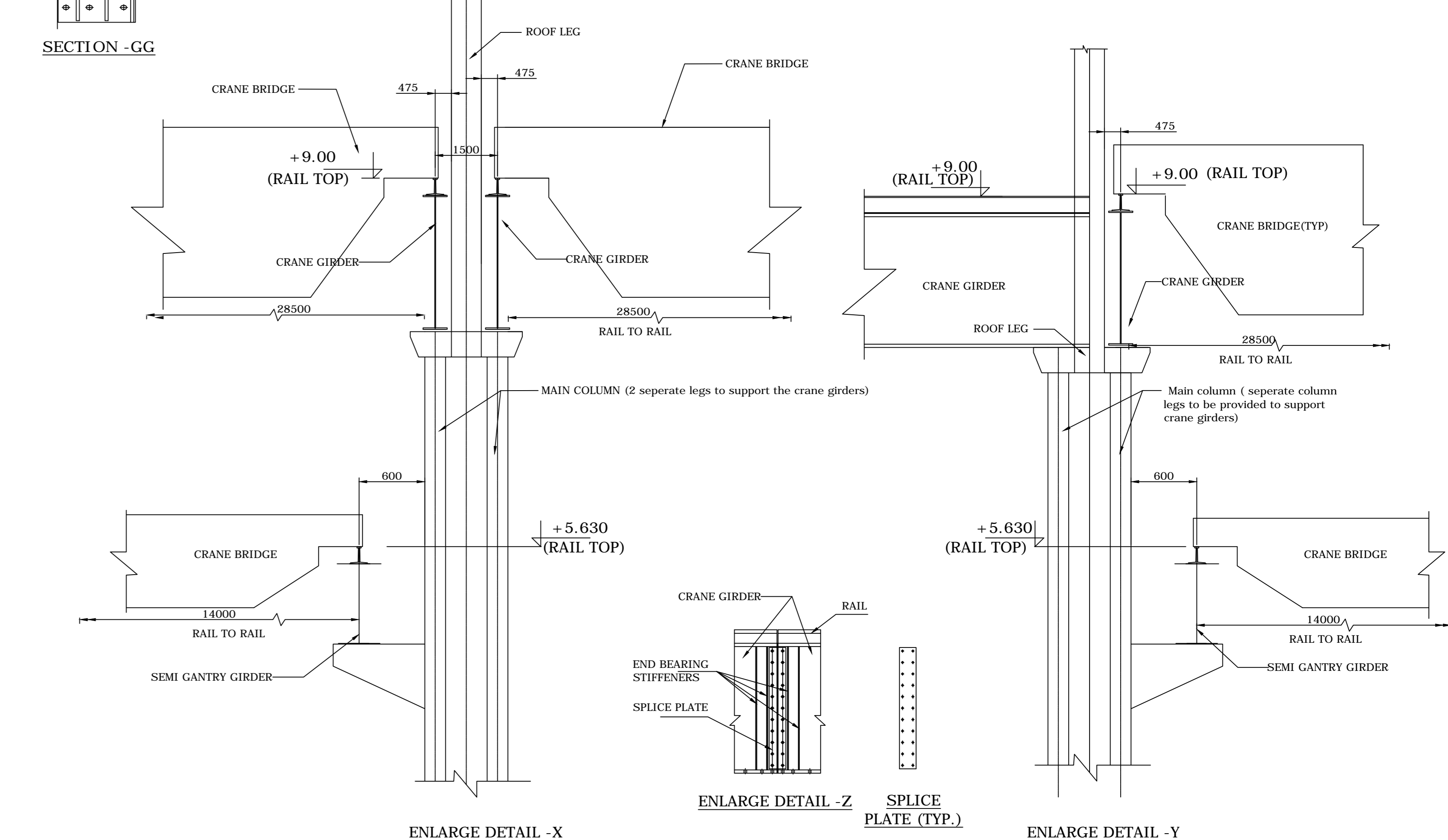
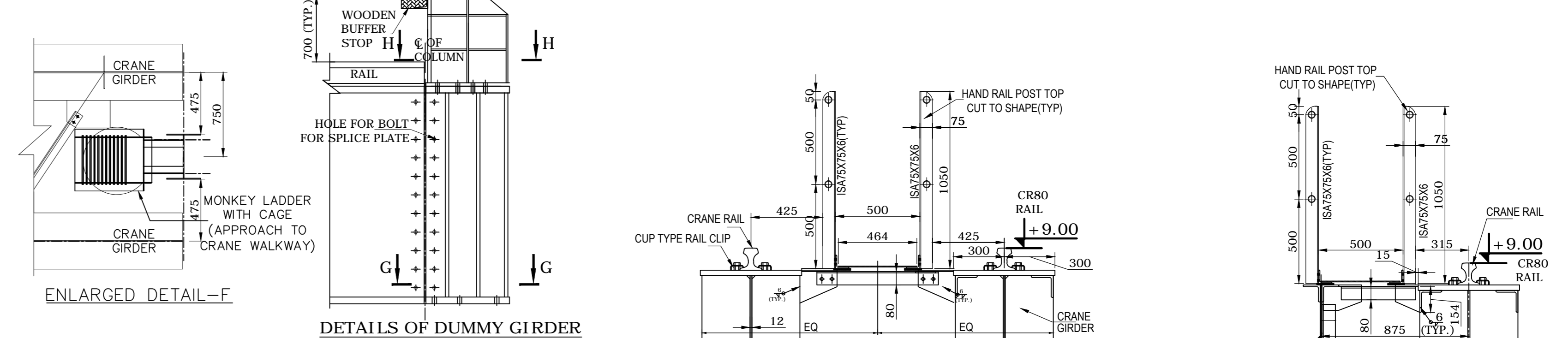
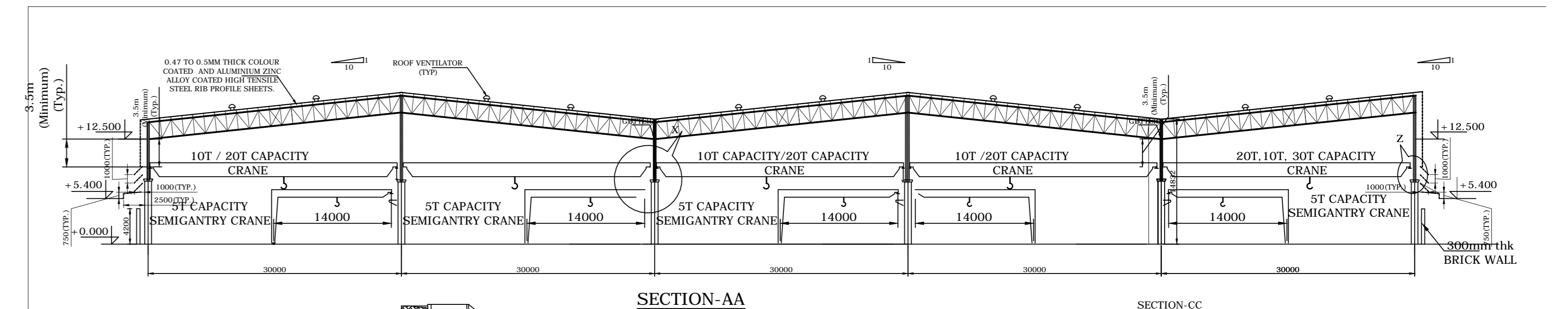
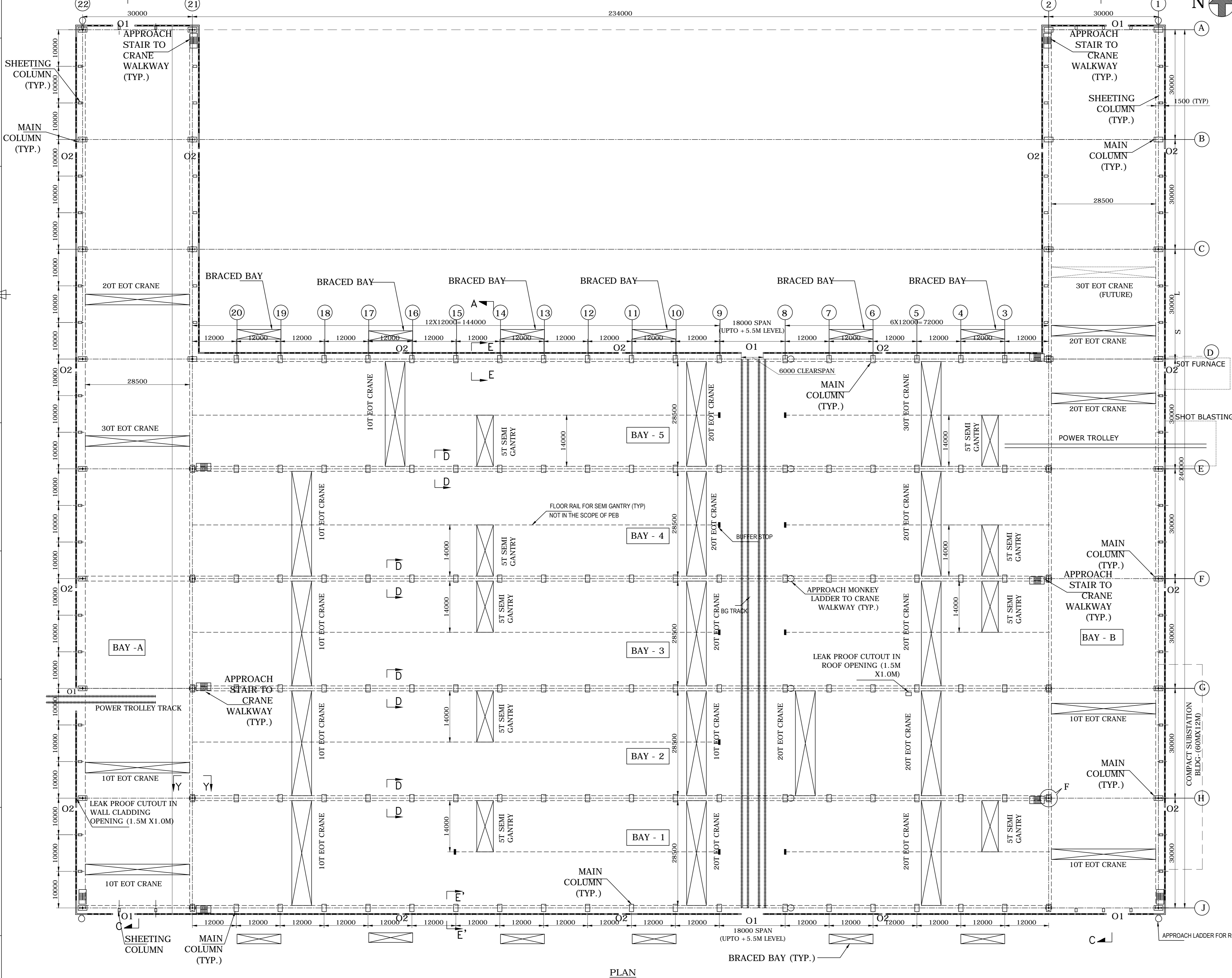
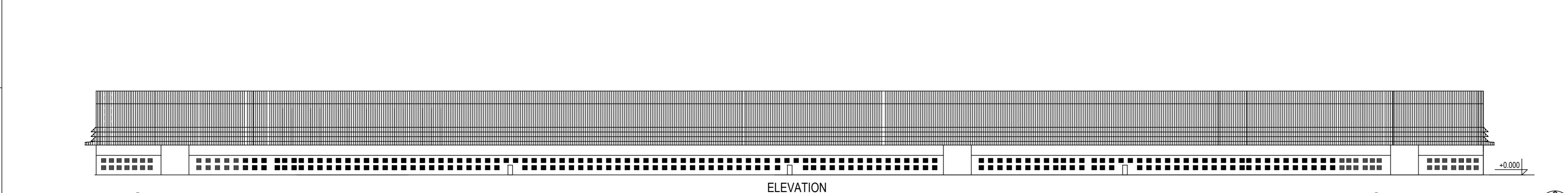
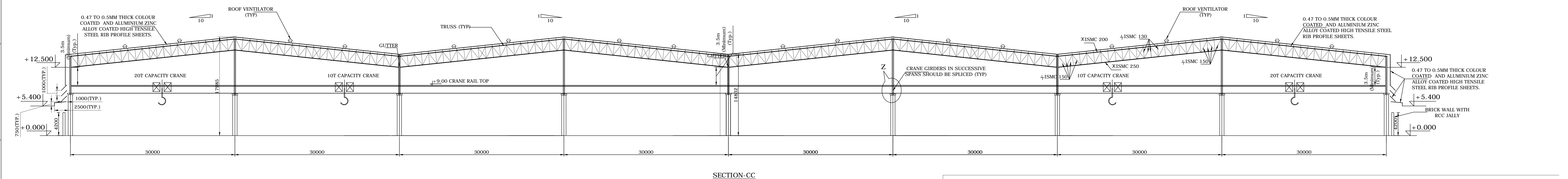
Signature .....Date.....

Designation .....



 Bharat Heavy Electricals Ltd UNIT: HIGH PRESSURE BOILER PLANT TIRUCHIRAPALLI - 620014 <small>SCALE</small>		DRN	NAME J.SIMON	SIGNATURE <i>J. Simon</i>	DATE 04.04.01	NO. OF VAR
		CHD	K.GUNASEKARAN	<i>K. Gunasekaran</i>	5/4/2001	
		APPD	A.ARULANANDHAM	<i>A. Arulandham</i>		
DEPT CIVIL	GRADE OF UNTOOL DIM C/M/F		WEIGHT (Kg)	REF TO ASSY / OLD DWG	ITEM NO	No OF ITEMS
CODE 2200						
TITLE <b>DETAILS OF CUP TYPE RAIL CLAMP</b>			CARD CODE U 01	DRAWING NO : <b>BHE:CP:04:39:2001</b>		REV

UB-113004



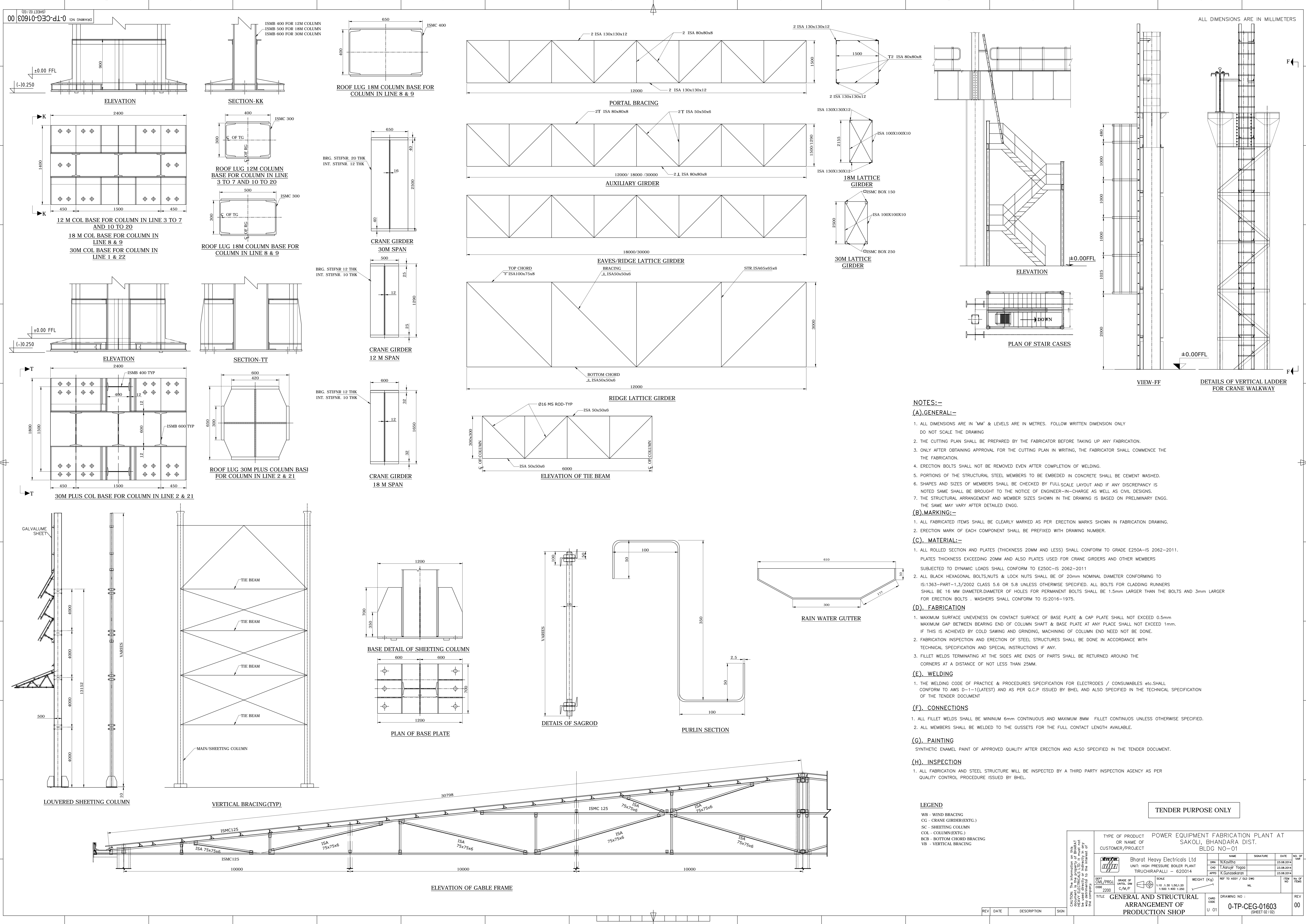
S No	Description	Level (in m)	RAIL TO BE USED
1	Eaves Level of Portal	12.50	12.50
2	Crane Rail Top Level	9.00	9.00
3	Semigantry Crane rail Top Level	-	5.630

NOTES:-  
 1) ALL DIMENSIONS ARE IN MM/A LEVELS ARE IN M  
 2) DO NOT SCALE THE DRAWING. FOLLOW WRITTEN DIMENSION ONLY  
 3) AT LEAST 5% OF ROOF AREA IS TO BE COVERED USING POLYCARBONATE ROOF SHEETING FOR LIGHTING PURPOSE.  
 4) TWO CUT OUT OPENINGS TO BE PROVIDED WHEREVER CHIMNEY IS TO BE PLACED

LEGEND:-  
 O1: OPENING 4000MM X 6000MM  
 O2: OPENING 2100MM X 1200MM  
 1: Turb Ventilators (500mm dia) - 160 Nos. (Total)  
 2: 6mm Thick MS valley gutters with 3 mm thick FRP coating

TENDER PURPOSE ONLY

TYPE OF PRODUCT		POWER EQUIPMENT FABRICATION PLANT AT SAKOLI, BHANDARA DIST. BLDG NO-01	
CUSTOMER/PROJECT		Bharat Heavy Electricals Ltd UNIT: HIGH PRESSURE BOILER PLANT TIRUCHIRAPPALLI - 620014	
DATE	SCALE	WEIGHT (Kg)	NO. OF SHEETS
02/01/2020	1:10, 1:30, 1:50, 1:20, 1:100, 1:400, 1:250		01
REV	DATE	DESCRIPTION	SIGN
01		GENERAL AND STRUCTURAL ARRANGEMENT OF PRODUCTION SHOP	



**NOTES:-**

**(A).GENERAL:-**

1. ALL DIMENSIONS ARE IN 'MM' & LEVELS ARE IN METRES. FOLLOW WRITTEN DIMENSION ONLY DO NOT SCALE THE DRAWING
2. THE CUTTING PLAN SHALL BE PREPARED BY THE FABRICATOR BEFORE TAKING UP ANY FABRICATION.
3. ONLY AFTER OBTAINING APPROVAL FOR THE CUTTING PLAN IN WRITING, THE FABRICATOR SHALL COMMENCE THE FABRICATION.
4. ERECTION BOLTS SHALL NOT BE REMOVED EVEN AFTER COMPLETION OF WELDING.
5. PORTIONS OF THE STRUCTURAL STEEL MEMBERS TO BE EMBEDDED IN CONCRETE SHALL BE CEMENT WASHED.
6. SHAPES AND SIZES OF MEMBERS SHALL BE CHECKED BY FULL-SCALE LAYOUT AND IF ANY DISCREPANCY IS NOTED SAME SHALL BE BROUGHT TO THE NOTICE OF ENGINEER-IN-CHARGE AS WELL AS CIVIL DESIGNS.
7. THE STRUCTURAL ARRANGEMENT AND MEMBER SIZES SHOWN IN THE DRAWING IS BASED ON PRELIMINARY ENGG. THE SAME MAY VARY AFTER DETAILED ENGG.

**(B).MARKING:-**

1. ALL FABRICATED ITEMS SHALL BE CLEARLY MARKED AS PER ERECTION MARKS SHOWN IN FABRICATION DRAWING.
2. ERECTION MARK OF EACH COMPONENT SHALL BE PREFIXED WITH DRAWING NUMBER.

**(C). MATERIAL:-**

1. ALL ROLLED SECTION AND PLATES (THICKNESS 20MM AND LESS) SHALL CONFORM TO GRADE E250A-IS 2062-2011. PLATES THICKNESS EXCEEDING 20MM AND ALSO PLATES USED FOR CRANE GIRDERS AND OTHER MEMBERS SUBJECTED TO DYNAMIC LOADS SHALL CONFORM TO E250C-IS 2062-2011
2. ALL BLACK HEXAGONAL BOLTS,NUTS & LOCK NUTS SHALL BE OF 20mm NOMINAL DIAMETER CONFORMING TO IS:1363-PART-1,3/2002 CLASS 5.6 OR 5.8 UNLESS OTHERWISE SPECIFIED. ALL BOLTS FOR CLADDING RUNNERS SHALL BE 16 MM DIAMETER,DIAMETER OF HOLES FOR PERMANENT BOLTS SHALL BE 1.5mm LARGER THAN THE BOLTS AND 3mm LARGER FOR ERECTION BOLTS . WASHERS SHALL CONFORM TO IS:2016-1975.

**(D). FABRICATION**

1. MAXIMUM SURFACE UNEVENNESS ON CONTACT SURFACE OF BASE PLATE & CAP PLATE SHALL NOT EXCEED 0.5mm. MAXIMUM GAP BETWEEN BEARING END OF COLUMN SHAFT & BASE PLATE AT ANY PLACE SHALL NOT EXCEED 1mm. IF THIS IS ACHIEVED BY COLD SAWING AND GRINDING, MACHINING OF COLUMN END NEED NOT BE DONE.
2. FABRICATION INSPECTION AND ERECTION OF STEEL STRUCTURES SHALL BE DONE IN ACCORDANCE WITH TECHNICAL SPECIFICATION AND SPECIAL INSTRUCTIONS IF ANY.
3. FILLET WELDS TERMINATING AT THE SIDES ARE ENDS OF PARTS SHALL BE RETURNED AROUND THE CORNERS AT A DISTANCE OF NOT LESS THAN 25MM.

**(E). WELDING**

1. THE WELDING CODE OF PRACTICE & PROCEDURES SPECIFICATION FOR ELECTRODES / CONSUMABLES etc.SHALL CONFORM TO AWS D-1-1(LATEST) AND AS PER Q.C.P ISSUED BY BHEL AND ALSO SPECIFIED IN THE TECHNICAL SPECIFICATION OF THE TENDER DOCUMENT

**(F). CONNECTIONS**

1. ALL FILLET WELDS SHALL BE MINIMUM 6mm CONTINUOUS AND MAXIMUM 8MM FILLET CONTINUOUS UNLESS OTHERWISE SPECIFIED.
2. ALL MEMBERS SHALL BE WELDED TO THE GUSSETS FOR THE FULL CONTACT LENGTH AVAILABLE.

**(G). PAINTING**

SYNTHETIC ENAMEL PAINT OF APPROVED QUALITY AFTER ERECTION AND ALSO SPECIFIED IN THE TENDER DOCUMENT.

**(H). INSPECTION**

1. ALL FABRICATION AND STEEL STRUCTURE WILL BE INSPECTED BY A THIRD PARTY INSPECTION AGENCY AS PER QUALITY CONTROL PROCEDURE ISSUED BY BHEL.

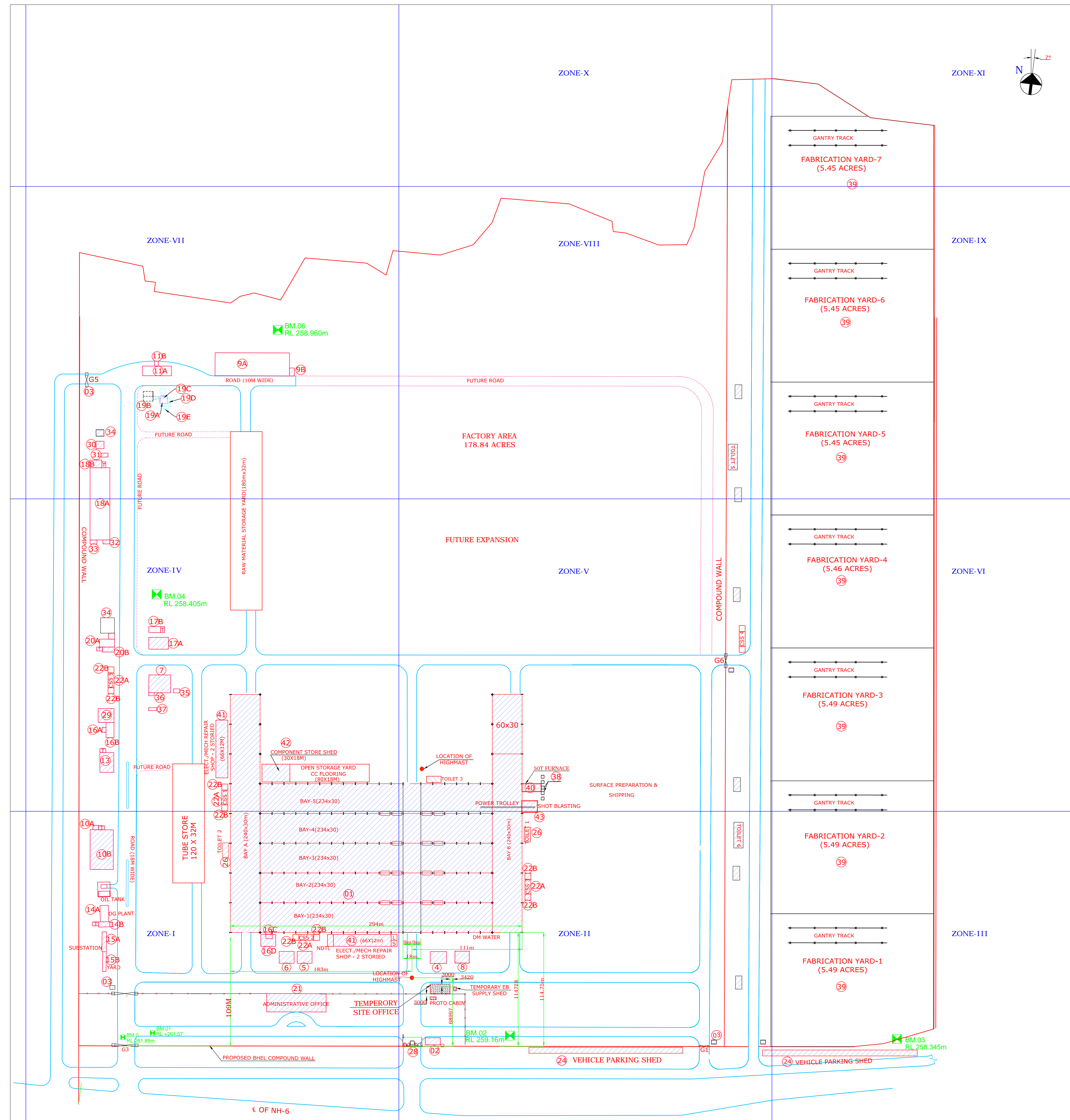
**LEGEND**

- WB - WIND BRACING
- CG - CRANE GIRDER(EXTG.)
- SC - SHEETING COLUMN
- COL - COLUMN(EXTG.)
- BCB - BOTTOM CHORD BRACING
- VB - VERTICAL BRACING

TENDER PURPOSE ONLY

TYPE OF PRODUCT POWER EQUIPMENT FABRICATION PLANT AT SAKOLI, BHANDARA DIST. BLDG NO-01		NAME		SIGNATURE		DATE		NO. OF	
CUSTOMER/PROJECT		Bharat Heavy Electricals Ltd		N.K.Gadgil		23.08.2014		REV	
UNIT: HIGH PRESSURE BOILER PLANT TIRUCHIRAPPALLI - 620014		C/O		T.Arunraj Yogees		23.08.2014		REV	
SCALE		C/M/F		K.Gunasekaran		23.08.2014		REV	
1:10, 1:30, 1:50, 1:20, 1:500, 1:400, 1:250		WEIGHT (Kg)		REF TO ASST / Q.D. DWG		ITEM NO		NO OF	
2000		NE		NE		NO		ITEMS	
TITLE GENERAL AND STRUCTURAL ARRANGEMENT OF PRODUCTION SHOP		CADD CODE		DRAWING NO :		REV		NO	
U 01		U 01		0-TP-CEG-01603		00		REV	
				(SHEET 02/02)					

REV	DATE	DESCRIPTION	SIGN

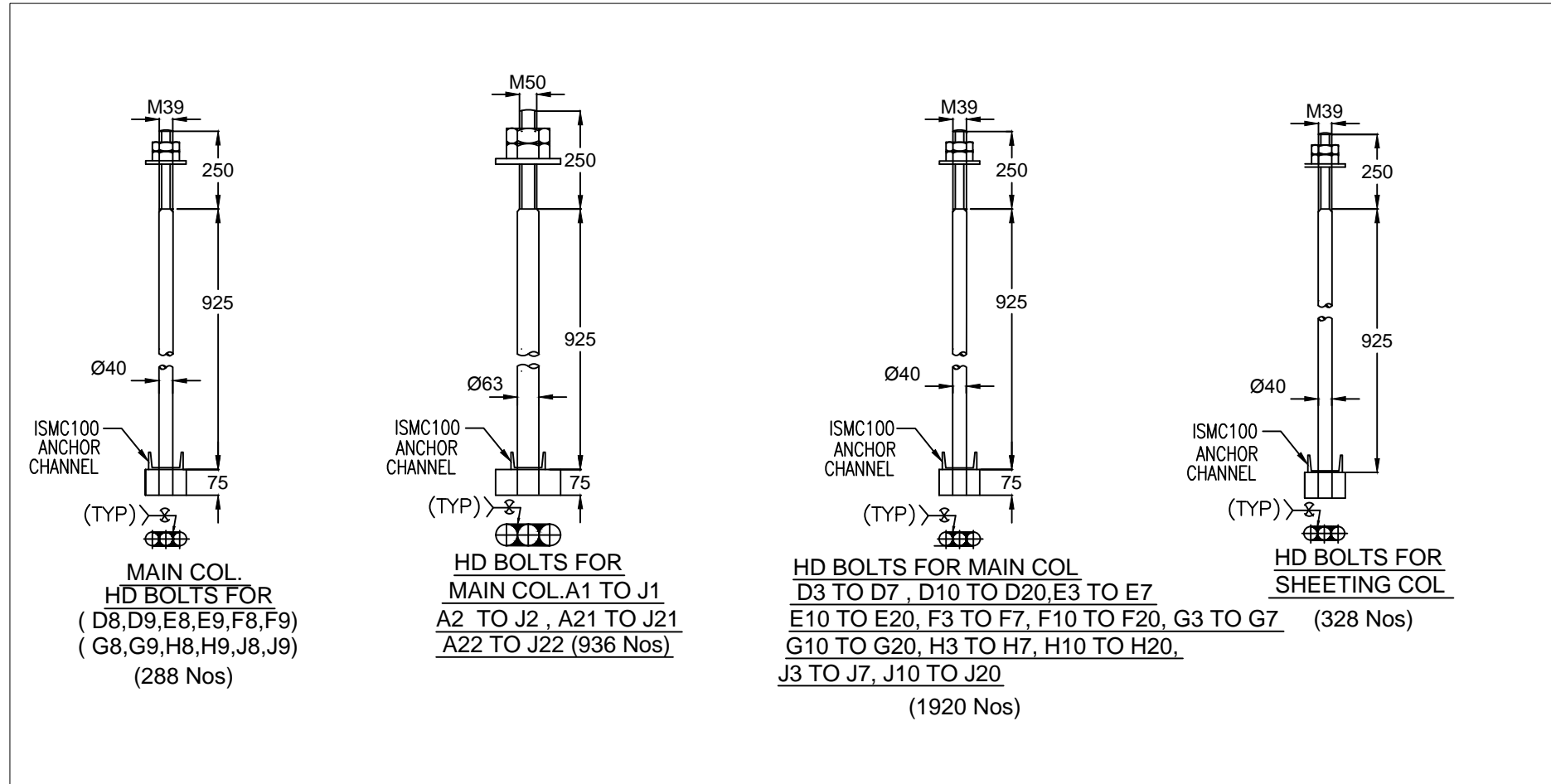


Sl.No	DETAILS	SIZE	NO OF STOREY
1.	PRODUCTION SHOP	49500 Sqm	
2.	SECURITY OFFICE	15MX3M	2
3.	SECURITY BOOTH(4NOS)	5MX4M	1
4.	FIRE STATION	15MX12M	1
5.	MATERIAL TESTING LAB	15MX12M	1
6.	FACTORY MEDICAL CENTER	16.5MX12M	1
7.	CANTEEN	24MX18M	2
8.	TRANSPORT GARAGE	15MX12M	1
9.	A. SCRAP DISPOSAL YARD	75MX24M	1
	B. OFFICE ROOM	8MX5M	1
10.	A. STORES OFFICE	15MX10M	1
	B. COVERED STORES SHED	40MX24M	-
11.	A. WEIGH BRIDGE-60T	-	-
	B. CONTROL ROOM	5MX4M	1
12.	WATER TANK-500 CUM-1	-	-
13.	COMPRESSED AIR PLANT	20MX14M	1
14.	A. DIESEL GENERATOR PLANT	30MX12M	1
	B. CONTROL ROOM	6MX4M	-
15.	A. MAIN ELECTRICAL SUBSTATION	20MX10M	2
	B. TRANSFORMER YARD	20MX8M	-
16.	A. LIQUID OXYGEN PLANT CONTROL ROOM	5MX4M	-
	B. LIQUID OXYGEN PLANT YARD	6MX10M	-
	C. ARGON PLANT MIXING ROOM	5MX4M	-
	D. ARGON PLANT YARD	16MX10M	-
17.	A. CIVIL OFFICE	20MX12M	-
	B. CIVIL STORES SHED	12MX6M	-
18.	A. LPG STORAGE YARD &VAPOURISER	75MX20M	-
	B. LPG CONTROL ROOM	12MX8M	1
19.	A. SEWAGE TREATMENT PLANT AERATION TANK	7.5MX5M	-
	B. SEWAGE TREATMENT PLANT COLLECTION SUMP	10MX1.0M	-
	C. SEWAGE TREATMENT PLANT MBR TANK	7.5MX1.5M	-
	D. SEWAGE TREATMENT PLANT TREATED WATER TANK	5MX2.5M	-
	E. SEWAGE TREATMENT PLANT HOLDING TANK & SLUDGE DRYING BED	4.1MX1.8M	-
20.	A. INFLAMMABLE STORES YARD	15MX8M	-
	B. ISSUE OFFICE	12MX3M	1
21.	ADMINISTRATIVE BLOCK	60MX18M	2
22.	A. COMPACT SUBSTATION, 5 NOS	15MX6M	1
	B. SHED FOR COMPACT SUB STATION 10 NOS	6MX6M	-
24.	PARKING SHED	158MX6M	1
25.	LADIES REST ROOM- 1 NO	6MX6M	1
26.	TOILET- 6NOS	12MX6M	---
27.	CONTROL PANEL SHED 7 NOS	3MX4M	---
28.	MAINGATE STRUCTURE WITH SECURITY BUNK	---	---
29.	OXYGEN FILLING STATION	16MX14M	1
30.	FIRE FIGHTING EQUIP. SHED	8MX7.5M	---
31.	MOTOR CONTROL CENTER SHED	7MX4M	---
32.	COMPR. SHED IN LPG YARD	7MX4M	---
33.	VAPORISER SHED IN LPG YARD	10.5MX4M	---
34.	CYLINDER STORAGE SHED	6MX6M	---
35.	CANTEEN LPG MANIFOLD SHED	6.3MX4M	---
36.	CANTEEN VESSELWASHING SHED	6.3MX4M	---
37.	CANTEEN BOILER SHOP	9MX3M	---
38.	LPG MANIFOLDING SHED FOR SHOPS - 5 NOS	3MX3M	---
39.	FABRICATION YARD(7NOS)	15491.4sqm	---
40.	FURNACE SHED	20MX8M	---
41.	ELECTRICAL MECHANICAL REPAIR SHOP-2 NOS	66M X12M	2
42.	COMPONENTS STORES SHED	30MX 18M	---
43.	SHOT BLASTING SHED	15MX 10M	---

NOTES:  
 1. ALL DIMENSIONS ARE IN METERS  
 L-LADIES REST ROOM  
 T-TOILETS  
 S-SANITATION CREW  
 G1, G2, G3, G4, G5, G6, G7 - GATES

PROPOSED BUILDINGS

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT		POWER EQUIPMENT FABRICATION PLANT AT SAKOLI, BHANDARA DIST			
Bharat Heavy Electricals Ltd		NAME		SIGNATURE	
UNIT: HIGH PRESSURE BOILER PLANT TIRUCHIRAPPALLI - 620014		DESIGNER		DATE	
SCALE		APPROVED		NO. OF REV	
1:1000		DATE		NO. OF ITEMS	
WEIGHT (Kg)		REF TO ASSY / OLD DWG		REV	
C/DWG		C/DWG		REV	
U 01		01		01	
DRAWING NO : 0-TP-CEG-01050		REV		01	



**NOTES:-**

- 1) ALL DIMENSIONS ARE IN 'MM' & LEVELS ARE IN 'M'
- 2) DO NOT SCALE THE DRAWING. FOLLOW WRITTEN DIMENSION ONLY
- 3) ALL HD BOLTS SHALL CONFORM TO IS:2062, NUT CONFORMS TO IS:1367, WASHER CONFORMS TO IS:2016

DEPT CIVIL CODE 2200		GRADE OF UNTOL. DIM C/M/F		SCALE 		WEIGHT (Kg)		REF TO ASSY / OLD DWG		ITEM NO		No OF ITEMS	
								TITLE BOLT REQUIREMENT FOR PEFP BHANDARA SHOPFLOOR		CARD CODE U 01		DRAWING NO : 3-TP-CEG-01584	
TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT <b>PEFP BHANDARA</b>													
Bharat Heavy Electricals Ltd UNIT: HIGH PRESSURE BOILER PLANT TIRUCHIRAPALLI - 620014				DRN & CHD T. AARUYIR YOGAA		SIGNATURE K.GUNASEKARAN		DATE 30-7-14		NO. OF VAR			
				APPD K.GUNASEKARAN		DATE 30-7-14		NO. OF VAR					

CAUTION: The information on this document is the property of BHARAT HEAVY ELECTRICALS LTD. It must not be used directly or indirectly in any way detrimental to the interest of the company.